



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,880	12/08/2004	Joachim Kiefer	15588-00031-US	6749
23416 7590 04/13/2010 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899				
EXAMINER				
PEZZUTO, HELEN LEE				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
04/13/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/506,880

Applicant(s)

KIEFER ET AL.

Examiner

Helen L. Pezzuto

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13, 15, 16, 18-22 and 34-44 is/are pending in the application.
- 4a) Of the above claim(s) 35-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13, 15, 16, 18-22 and 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 13, 15, 16, 18-22 and 34-44 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsman's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's amendment to claim 20 and the addition of claims 35-44 filed in the response on 2/16/10 is acknowledged.

Election/Restrictions

1. Newly submitted claims 35-44 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The membrane as set forth in original claims 13, 15-16, 18-22, and 34 can be made by other viable process including graft polymerization of vinyl-containing phosphonic acid onto polymer film substrate.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 35-44 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Currently, claims 13, 15-16, 18-22, and 34 are under consideration in this application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1796

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 13, 15-16, 18-22, and 34 are rejected under 35

U.S.C. 103(a) as being unpatentable over Formato et al. (US-469) for the reasons of record.

US 6,248,469 to Formato et al. discloses a solid polymer electrolyte membrane (SPEM) having a porous polymer substrate interpenetrated with an ion-conducting polymer material. Suitable polymer substrates include those containing at least one nitrogen, oxygen or sulfur atom in the recurring units encompassing the polymer film as expressed in the present claims (col. 6, lines 22-50; col. 7, lines 1-29; col. 10, lines 9-18). The preferred ion-conducting material includes the instant polyvinylphosphonic acid (col. 14, lines 31-41). The resultant membrane has ion-conductivity of greater than 0.1 S/cm even above temperatures of at least about 100°C (col. 12, lines 58-67). One of prior art embodiments in producing the SPEM comprises the step of preparing the substrate polymer and subsequently impregnating the substrate with the chosen ion-conducting monomer, which are then polymerized in situ to form

the composite SPEM (col. 8, lines 30-34; col. 15, lines 5-12; col. 17, lines 22-45). Prior art further teaches an optimal interpenetration of the polymer substrate by the ion-conducting polymer to be in the range of 40-90% volume, and exemplifies percent sulfonation within those expressed in the present claims (col. 18, lines 13-15; working examples). Once the in-situ polymerization of vinylphosphonic acid in the presence of a polymer film substrate to form a composite SPEM membrane is suggested, the determination of optimum or workable ranges of the respective components within prior art general conditions would involve only routine skill in the art. Furthermore, the present claims are presented in a product-by-process format. Thus, the patentability of the claimed invention is determined based on the product itself, not the method of making it. It is well settled that if the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process. In the instant case, applicant's method and reactants are substantially the same as those in prior art in-situ polymerization method. Accordingly, the same product is expected to be formed. In any event, even if the methods are different, when applicant's product and that of the prior art appear to be identical or substantially identical, the burden

shifts to applicant to provide evidence that the respective products do in fact differ, and that prior art product does not necessarily or inherently possess the relied upon characteristics of applicant's claimed product.

Response to Arguments

Applicant's amendment and remarks filed on 2/16/10 have been fully considered. Applicant repeated much of the argument that the polymer substrate of Formato et al. is materially different from the polymer film of step (a) because it is porous, and therefore, the composite membrane resulting from prior art method is also different from the claimed membrane. The examiner respectfully disagrees and has fully considered the structure of the product implied by the process steps. The present claims recites a membrane produced by the steps of mixing a polymer with vinyl phosphonic acid monomer and subsequently polymerize the monomers in-situ to produce a membrane. This is in essence what prior art in-situ polymerization embodiment teaches. The argument with respect to the entire bulk region of the recited polymer film in step (a) being imbibed with monomer solution, as compared to prior art being limited to only the void regions is not persuasive because applicant's polymer film as claimed is not only limited to a non-porous polymer film as asserted, and thus, encompassing

Art Unit: 1796

prior art polymer substrate as a whole, having any degree of porosity. It is the claims, not arguments or conclusory statements, which defined applicant's invention, and as such the recited polymer film in step (a) is indistinguishable from prior art polymer substrate. Finally, the alleged unexpected advantage of the claimed membrane showing conductivity at high temperature is not found to be persuasive or unexpected as US-469 clearly discloses high ion-conductivity of greater than 0.1 S/cm, even at temperature of at least about 100°C (col. 12, lines 52-68). Accordingly, the examiner's position is maintained.

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen L. Pezzuto whose telephone number is (571) 272-1108. The examiner can normally be reached on 8 AM to 4 PM, Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helen L. Pezzuto/

Art Unit: 1796

Primary Examiner

Art Unit 1796

hlp